



Chambers's Journal

SIXTH SERIES.

A NAVAL OFFICER'S TRIP TO SAN JOSÉ, CENTRAL AMERICA.

I'VE seen the vice-consul,' he says; 'passes have been obtained, and he has made arrangements for the first batch to go to San José to-morrow morning.'

The above words were spoken by the paymaster of H.M.S. —, stationed at Port Limon, the Atlantic port of Costa Rica in Central America.

For some weeks we had been sweltering in Limon Bay, the ship rolling continuously to the long eastern swell which sets in along the coast the greater part of the year. Consequently the prospect of a change to the capital, situated among the cool uplands, was received with great satisfaction by all the officers of the wardroom mess.

The next morning at 5.45 A.M. the first batch found themselves seated in one of the cars of the Costa Rica Railway Company—an English company, and managed by Englishmen; but before commencing the journey a few words about Port Limon may not be amiss. The town dates from the opening of the railway in the year 1892. With the exception of a few merchants and railway officials, and the Costa Rican element (consisting of the governor, police, and customs), the population of 3500 to 4000 is made up of negroes from the various West India Islands—by far the greater part from Jamaica. They are nearly all engaged on the railway or in cultivating bananas, an industry which has enormously developed during the last three years, the number of bunches exported during 1897 being about 2,000,000. About two-thirds of the population are loyal subjects of the Queen, and when one of 'de ole lady's' ships appears in the port they become very demonstrative and assume a proprietary right in all that appertains to it, and are rather given to crow over the foreign negro in consequence. One thing they hold as an article of faith—that if any man's hand is against them, 'de man-o'-war buckra' will see them through.

No. 35.—Vol. I.

Just as the train was about to start, our genial friend, Vice-consul Lindo, got on board, he having kindly offered to accompany us as guide, philosopher, and friend; and, from his intimate knowledge of the country, very useful we found him, both on the journey and afterwards in the capital. The route for the first twelve miles runs along the coast in a north-westerly direction to Swampmouth. Following the track, the banana plantations approach to within a few feet on either side of it, but they rarely go more than a quarter of a mile or so into the interior, which is a dense tropical jungle teeming with animal and bird life.

At intervals along the line huge piles of hard green bananas are waiting for the banana train to run them into Port Limon, and from thence, by means of fast steamers, they will reach New York in about six days, ripe and ready for use.

Leaving the coast at Swampmouth and branching off nearly due west into the interior, we cross the Matina River (a sluggish, brown, muddy-looking stream), and find ourselves in Matina, a long, straggling village of wooden huts built on piles, and situated on the edge of a swamp. Matina is not a place in which the white man loves to linger; but he whose business avocations call him there must carry his quinine as a smoker does his match-box if he would make a good stand against the malarial fiend. The place does not, however, appear to have a very depressing effect on 'Quashee,' nor, judging by the number of woolly-headed urchins about, does it interfere with the wonderful prolificness which is one of his chief characteristics.

The conditions of the climate and soil of Matina are most favourable for the cultivation of the banana. The plantations are arranged along the banks of the river, which overflows its banks about twice a year; and when it retires to its normal bed it leaves a rich alluvial deposit, which renews the soil and reduces the cost of production, as the plants will go on bearing much longer than

[All Rights Reserved.]

JULY 30, 1898.

those in other districts. A friend, himself engaged in the industry, informed us that the banana-farms in this district paid as much as fifty per cent. per annum for capital invested, and that some few years ago they were paying seventy-five per cent.

The next point of interest on the route is La Junta. Here we enter the valley of the Reventazon, and from this point we leave the plains, or *tierra caliente*, and the ascent to the uplands, or *tierras templadas*, may be said to begin. As the train climbs along the northern slope of the valley the scenery is one of unsurpassed beauty. Away down on its stony bed, the Reventazon, with its huge volume of clear, sparkling water, goes rushing and tumbling to the Caribbean Sea. Both slopes of the valley are covered with primeval forests in all the wild luxuriance of tropical growth. No longer shut in by the banana groves, we get the cool, exhilarating breezes which strike along the valley from the uplands.

At Las Lomas, the *bête noir* of the engineers of the line, we see some traces of the recent slides. During the heavy rains the upper slopes of the valley have an unpleasant way of precipitating themselves into the bed of the river, carrying with them half a mile or so of the track, and increasing enormously the working expenses of the company. The slides, however, this season have been very inconsiderable, and it is the opinion of competent authorities that they are working themselves out. So the British investor may take heart of grace; and when Las Lomas no longer figures largely in the balance-sheets of the company his heavily-discounted shares will begin to soar.

Continuing along the upper slopes of the valley, we come to the Turrialba district. Here the land is more undulating, and sweeps up towards the northern base of Mount Turrialba, the most eastern of the chain of volcanic mountains which trend in a westerly direction towards the Pacific, and which dominate the uplands of Costa Rica to the south and the lowlands of Nicaragua to the north. We are now in the coffee-growing district, although there are considerable tracts of land given over for grazing purposes, with here and there patches of sugar-cane.

The cultivation of coffee, which was the main article of export before bananas were thought of, is almost entirely in the hands of the *peons*, who are the descendants of the early settlers, and are mostly of unmixed Spanish blood. They have a horror of the plains, and, like their forefathers before them, stick to the coffee and the uplands.

The *peon* varies the monotony of coffee-culture by making a little *guaro*, a spirit distilled from the sugar-cane. This with him is a labour of love; but it has to be done 'under the rose,' as the government has the monopoly of all spirits. Nevertheless, no self-respecting *peon* would be without a little drop in his bottle, wherewith he will

always regale a stranger, provided he is properly introduced and the *Guardias* are not about.

The next point of interest is Cartago, the ancient capital, but vacated as the seat of government in favour of San José in 1821, when the Costa Ricans obtained their independence.

To the north, and towering to a height of 11,200 feet above sea-level, stands Mount Irazu, the highest of the Costa Rican cordillera. The summit may be reached on a mule in about eight hours from Cartago, and a view of both the Atlantic and Pacific Oceans obtained from it.

After leaving Cartago the grade becomes very severe—about five per cent. The engine struggles up the next two and a half miles to El Alto at the rate of about eight miles an hour; so we have ample time to notice the flora, which has become more familiar to us, and we see several old friends in the honeysuckle, blackberry, elderberry, &c., which grow along the edges of the track.

Arrived at El Alto, 5000 feet above sea-level, we are now at the highest point of the plateau. So, with steam shut off and brakes hard down, we rattle down the first ten miles of the Pacific slope into San José: distance from Port Limon, 103½ miles; time, 8½ hours.

San José is a well-built city of modern construction. There are none of the narrow, tortuous streets, with the heavily iron-barred windows, one sees in the older Spanish-American cities. It stands 3800 feet above sea-level, and its climate has a wonderfully bracing effect on enervated visitors from the plains.

We found the town in a state of war-like preparation. The *peons*, lately called in for military service, were to be seen everywhere being drilled and knocked into shape—swartly little fellows, clad in Paris-made blue jean suits of the French infantry type, but which, like the garments made by the 'Lilliputian tailors,' appeared to be cut on abstract principles. They were all armed with several types of rifles, and thoroughly well equipped except in the matter of boots, which in most cases were conspicuous by their absence, for the *peon* soldier marches best when his feet are unencumbered by foot-gear. Nevertheless, they seemed hardy little men brimming over with patriotism, and no doubt will give a good account of themselves if brought face to face with their natural enemies, the Nicaraguans.

During our stay in the capital we had the good fortune to hear the president, Don Rafael Iglesias, harangue the troops on the subject of the impending war with their neighbours over the much-vexed question of the San Juan River. He is a handsome, hard-working young man, impatient of leading-strings, and a vigorous opponent of the 'mañana' or *laissez faire* policy which too often obtains in the South and Central American republics. He has already done much for the development of his country by encouraging foreign enterprise; and,

among other services, has completed a contract with an American company for a railway from Titives on the Pacific coast to San José, thus connecting the two oceans by a continuous line of rail. Another scheme he has carried through, though of less public utility than the foregoing, is one of which the San Joséans may well be proud—namely, the recent completion and opening of the new Opera House, built at an enormous cost to the nation. We were enabled to see it under very favourable auspices, as the president not only put his box at our disposal, but sent one of his aides-de-camp to look after us. The building appears to be a small edition of the Paris Opera House, but, with its wonderful wealth of polished marble, frescoes, and gilt, is perhaps even more sumptuously got up. The decorations illustrative of the commerce of the republic are by an accomplished Italian artist; but by far the finest and brightest decorations we noticed were the three front rows of handsome, dark-eyed, well-dressed daughters of the soil lining the three tiers of

boxes. The performance, which happened to be *Le Grand Mogul*, was rendered in French by a good company from Paris. The Opera House is said to have cost a million dollars gold currency, or in round numbers two hundred thousand pounds sterling. Taking the population of the republic at two hundred and fifty thousand, this represents sixteen shillings per head of population—an object-lesson to the British paterfamilias who grumbles at the penny in the pound rate for free library purposes.

The four days we remained in San José were made very pleasant for us by several of the members of the English community. Our thanks are also due to the members of the Costa Rican Club for the charming smoking concert they gave us. About the latter we should like to go more into details, but the space at our command in a magazine article will not admit of it. So we must pack up our portmanteaus and be off in the morning train for Port Limon, where, I have no doubt, we shall find the second batch all ready for the road.

JOHN BURNET OF BARNES.

CHAPTER XLIV.—THE END OF ALL THINGS.



AM writing the last words of this tale in my house of Barnes after many years have come and gone since the things I wrote of. I am now no more young, and my wife is no more a slim maid but a

comely woman. The years have been years of peace and some measure of prosperity. Here in Tweeddale life runs easily and calm. Our little county matters are all the care we know, and from the greater world beyond there come only chance rumours of change and vexation. Yet the time has not been idle, for I have busied myself much with study and the care of the land. Many have sought to draw me out to politics and statecraft; but I have ever resisted them, for, after all, are these things of such importance that for them a man should barter his leisure and peace of mind? So I have ever stayed fast in this pleasant dale, and let the bustle and clamour go on without my aid.

It is true that more than once I have made journeys even across the water, and many times to London, on matters of private concern. It was during one of these visits to Flanders that I first learned the importance of planting wood on land, and resolved to make trial on my own estate. Accordingly I set about planting on Barnes, and now have clothed some of the barer spaces of the hills with most flourishing plantations of young trees, drawn in great part from the woods of Dawyck. I can never hope to reap the benefit of them myself, but haply my grandchildren will yet bless me when they find covert

and shade where before was only a barren hillside.

Also in Tweed I have made two cauld, both for the sake of the fish and to draw off streams to water the meadows. In the wide reaches of water in Stobo haughs I have cut down much of the encumbering brushwood, and thus laid the places open for fishing with the rod. Also with much labour I have made some little progress in cleaning the channel of the river in places where it is foully overlaid with green weed. The result, I am pleased to think, has been good, and the fish thrive and multiply. My crowning triumph befell me two years ago in a wet, boisterous April, when, fishing with a minnow in the pool above Barnes, I landed a trout of full six pounds weight.

The land, which had fallen into neglect in my father's time and my own youth, I did my utmost to restore, and now I have the delight of seeing around me many smiling fields and pleasant dwellings. In the house of Barnes itself I have effected many changes, for it had aforetime been liker a Border keep than an orderly dwelling. But now, what with many works of art and things of interest gathered from my travels abroad, and, above all, through the dainty fingers of my wife, the place has grown gay and well adorned, so that were any of its old time masters to revisit it they would scarce know it for theirs.

Of my own folk I have little to tell. Tam Todd has long since gone the way of all the earth, and lies in Lyne kirkyard with a flat stone above him. New faces are in Barnes and Dawyck, and

there scarce remains one of the old serving-men who aided me in my time of misfortune. Also, many things have changed in all the countryside, and they from whom I used to hear tales as a boy are now no more on the earth. In Peebles there are many new things, and mosses are drained and moors measured out till the whole land wears a trimmer look. But with us all is still the same, for I have no fancy for change in that which I loved long ago, and of which I would fain still keep the remembrance. Saving that I have planted the hillside, I have let the moors and marshes be, and to-day the wild-duck and snipe are as thick on my land as of old.

As for myself, I trust I have outgrown the braggadocio and folly of youth. God send I may not have also outgrown its cheerfulness and spirit! For certain, I am a graver man and less wont to set my delight in trifles. Of old I was the slave of little things, weather, scene, company; but advancing age has brought with it more of sufficiency unto myself. The ringing of sword and bridle has less charm, since it is the reward of years that a man gets more to the core of a matter and has less care for externals. Yet I can still feel the impulses of high passion, the glory of the chase, the stirring of the heart at a martial tale. Now, as I write, things are sorely changed in the land; for, though peace hangs over us at home, I fear it is a traitor's peace at the best, and more horrific than war. Time-servers and greedy sycophants sit in high places, and it is hard to tell if generous feeling be not ousted by a foul desire of gain. It is not for me to say. I have no love for king or parliament, though much for my country. I am no hot-headed king's man—nay, I never was; but when they who rely upon us are sold for a price, when oaths are broken

and honour driven away, I am something less of one than before.

As I write these last words I am sitting in my old library at Barns, looking forth of the narrow window over the sea of landscape. The afternoon is just drawing to evening—the evening of a hot August day, which is scarce less glorious than noon. From the meadow come the tinkling of cattle-bells and the gentle rise and fall of the stream. Elsewhere there is no sound, for the summer weather hangs low and heavy on the land. Just beyond rise the barrier ridges, green and shimmering, and behind all the sombre outlines of the great hills. Below, in the garden, my wife is plucking flowers to deck the table, and playing with the little maid, who is but three years old to-day. Within the room lie heavy shadows and the mellow scent of old books and the faint fragrance of blossom.

And as I look forth on this glorious world, I know not whether to be glad or sad. All the years of my life stretch back till I see as in a glass the pageant of the past. Faint regrets come to vex me, but they hardly stay, and as I look and think I seem to learn the lesson of the years, the great precept of time. And deep in all, more clear as the hours pass and the wrappings fall off, shines forth the golden star of honour, which, if a man follow it, though it be through quagmire and desert, fierce faces and poignant sorrow, will bring him at length to a place of peace.

But these are words of little weight, and I am too long about my business. Behold how great a tale I have written unto you. Take it, and, according to your pleasure, bless or ban the narrator. Haply it will help to while away a winter's night, when the doors are barred and the great logs crackle, and the snow comes over Caerleon.

THE END.

MICROBES IN MILK.

By ERNEST C. FINCHAM, M.R.C.S. Eng., L.R.C.P. Lond.



IT will be readily granted that the inspection of milk and its sources of supply is of even more importance from a public health point of view than the inspection of meat, since milk is so largely used as the food of infants.

Milk, immediately it is taken from the healthy cow, contains no microbes. Hardly has the milk settled in the pail than they abound, so many as 10,000 in one-quarter cubic inch having been detected. The question which naturally presents itself is, 'Where do they come from?' From the soiled teats, from the soiled hands of the workers, from the atmosphere of the milking-shed, and from the pails themselves. They possess the property of propagating very rapidly.

Monsieur de Freudeurich, of the Berne Labora-

tory, asserts that milk just drawn containing in one-quarter cubic inch 9000 microbes, seven hours later was found to contain 60,000. After a period of twenty-five hours had elapsed, 5,000,000 microbes were present in the same quantity of milk; and if the temperature be raised to ninety-five degrees Fahrenheit, the microbic population of the same milk, during the same time, would reach the enormous total of 812,500,000!

Children appear particularly prone to contract consumption through the agency of milk containing tubercle bacilli.

A Royal Commission appointed 'to inquire into the effect of food derived from tuberculous animals on human health' presented its report to parliament in April 1895. It was therein stated: 'We have obtained ample evidence that food derived from tuberculous animals can produce tuberculosis

in healthy animals. . . . In the absence of direct experiments we infer that man can also acquire tuberculosis by feeding upon materials derived from tuberculous food-animals. Tuberculous matter in milk is exceptionally active in its operations upon animals fed either *with the milk or with dairy produce derived from it*. It cannot, then, be doubted that, in view of the rapidity with which tuberculosis of the udder may become developed, the presence of a tuberculous cow in a dairy is a decided source of danger to the public. No doubt the largest part of the tuberculosis which man obtains through his food is *by means of milk containing tuberculous matter*. . . . We are aware of the preference by English people for drinking cow's milk raw, a practice attended by danger on account of possible contamination by pathogenic organisms. The boiling of milk, even for a moment, would probably be sufficient to remove the very dangerous quality of tuberculous milk.'

When sterilised (boiled) milk has been used a marked diminution takes place in the tendency to infant-cholera during hot weather, which is so terribly fatal to child-life under the age of one year. This ailment in large centres of population is often present to an alarming extent, and it cannot be doubted that injurious conditions represented in the milk form one of the chief causes of this disease. As an active agent in the spread of scarlet fever, diphtheria, and enteric (typhoid) fever, milk is well known, and the risks run by the public in this respect are not imaginary.

A few years ago a man was tried at a London police-court on a charge of stealing milk. In the evidence it transpired that his family was in a state of great destitution, one or more of its members suffering from scarlet fever, and that he had taken a jug from the sick-room, sallied forth, and dipped it into a milk-can. The man was arrested, and the milkman continued his rounds, dispensing the contaminated milk!

An outbreak of enteric fever at Great Harwood, Lancashire, was clearly traceable to the agency of milk infected by human means.

The *Lancet* two years ago cited a case in which a child was attacked by diphtheria at the house of a milkman. The disease was duly notified. The child died in two days. Yet for some days afterwards milk was supplied as usual from the dairy to the customers!

At Finchley a few years ago a somewhat unique outbreak of throat-illness, followed by true diphtheria, occurred. The throat-illness was of short duration, owing to the means taken to combat its appearance. Acute symptoms set in rapidly, the cases were confined to one particular neighbourhood, and in several instances houses were invaded by multiple attacks. Houses of all classes and of different sanitary conditions were attacked, the common factor of the problem being the milk-supply. On the fourth day of the outbreak a

handbill was issued warning all persons to boil the milk. Twenty-four hours after the issue of this notice the epidemic was arrested as suddenly as it had commenced. It was noticed that the better-class houses—those using the most milk—were the chief sufferers. A careful examination of the throats of the milkers showed nothing amiss, but three of the cows were found to have diseased teats, and one had a chronic abscess of the udder! The remedy in this case was boiling the milk. However, there are many people who will not adopt this simple plan, either on account of the extra trouble or because an unpleasant taste is imparted to the milk by boiling.

Milk can now be obtained from several large vendors which has been thoroughly and efficiently sterilised by heat applied under pressure; by this means ebullition is prevented, yet the high temperature maintained destroys all germ-life without in any way altering the outward appearance or ordinary properties of the milk. The milk is obtained in the first place from selected farms, and is supplied under a stringent contract. Samples of the milk are taken and submitted to a careful test in order to determine the degree of alkalinity. Should this fall below a certain point the milk is rejected; if the milk, after testing, is found to be satisfactory, it is poured into a 'receiver' capable of holding about 400 gallons. The milk then flows by gravitation through a double filter of swan's-down and muslin into an 'amalgamator.' The filter is a cylindrical vessel of tinned copper about a foot in diameter and two feet high, containing two 'grids' eight inches apart. These 'grids' are perforated discs of tinned iron; the layers of swan's-down being placed upon and secured to the discs by the muslin referred to above. The filtration takes place from below upwards, in order that all sediment may remain at the bottom of the filter. The importance of the filtration process may be gauged from the investigations of Dr Backhaus, who has calculated that the milk supplied to the people of Berlin is so foul as to compel the Berliners to consume in this way three hundred-weight per diem of excrementitious material derived from the cows.

The 'amalgamator' consists of a tinned copper vessel with a lid. Through the lid runs a vertical shaft, having at its lower end an apparatus which closely resembles the screw-propeller of a steamer. This screw is kept in constant motion whilst the 'amalgamator' is filling, in order to ensure a thorough admixture of the cream which may have arisen to the upper surface of the milk during the period of filtration. From this vessel the milk flows through a second filter (similar in dimensions and construction to the first) into the syphon bottling-machine, where the bottles are automatically filled with milk to the requisite level. The construction of this machine is ingenious. The syphons are pivoted, and to one end is

attached a weight, so that when the bottle is removed this weight immediately throws the syphon back and seals it by bringing an india-rubber ring attached to the end which is immersed in the milk in contact with the containing tank. The bottles are then placed in 'baskets' and conveyed to the sterilising machine. This is a huge tinned copper box, the upper part of which can be raised or lowered at will. When everything is in readiness the lid is closed and securely clamped. Steam generated from absolutely pure water is allowed to flow freely in, and the bottles are left for a prescribed time under a pressure of about 5 lb. per square inch, corresponding to a temperature (nearly) of 219 degrees Fahrenheit. The safety-valve is then gradually opened, and when the pressure has fallen to the necessary

extent a crank is turned—this draws the 'closing bars' down—and the bottles are effectually sealed under the exclusion of the atmosphere. In this way all noxious germs in the milk, arising from contact of the raw milk with an impure atmosphere or any other source of contamination, are rendered harmless.

Milk, next to bread, is more largely consumed than any other food-stuff, and it is a notable exception, for almost every other article of food is subjected to a process of sterilisation by heat—namely, cooking—before we eat it.

This article is not intended to stand as a finger-post, pointing the way to a medical boggy, but rather to draw attention to a very real danger which is often ignored either through ignorance or carelessness.

QUEEN ELMA.

CHAPTER V.



AS I approached the Rathaus, I was challenged by a sentry. I presented my pass.

'I am Father Wiemann,' I said as firmly as I could, 'and I have been sent for by the Count Ulric.'

He saluted, and then conducted me to the guard-room, where the order for admittance was scrutinised by the sergeant. I remained as much as possible in the shadow.

'This is a bad business,' said the sergeant, turning to me and shaking his head. 'When the mob hear the Count is dead Heaven knows what will happen.'

'We shall all have our throats cut,' put in a soldier.

'Silence, fool!' thundered the sergeant. 'Who gave you permission to speak? Show the good father to the Count's cell.'

The man picked up a lamp and went out through the door. I followed him.

'If they choose me for one of those to fire on him,' he said to me, 'I'll throw down my rifle, come what may. I'll not have his blood on my head.'

We were passing through a dark passage at the time. I touched the man on the arm.

'Young man,' I said, 'if you raise your hand against the Count you will be damned eternally. I say this by the authority of the Holy Church.'

The light from the lamp fell on his pale, affrighted face.

'I'll not do it, I swear,' he muttered, crossing himself.

'I charge you to tell your companions what I have said,' I went on.

'I will,' he responded fervently.

We had emerged from the gloomy passage into a better-lighted corridor, which, I could see, was patrolled by a sentry. I drew the scarf higher over my face, and for the first time my heart palpitated violently. But no suspicion was aroused. The sentry summoned the janitor, who, after a casual scrutiny of the order for admittance, inserted his key into the lock of a door.

'You are late,' he observed. 'We expected you before this.'

I heard the bolt shoot back, and the door of the cell swung open.

I entered. 'See that I am not disturbed,' I said to the official who had admitted me.

He nodded, and the door clanged to.

The cell was lit by one small lamp. It was a little time before my eyes accustomed themselves to the half-light. At length I was able to make out the form of a man stretched on a mattress upon the floor. I moved the lamp nearer. It was Ulric; he was sleeping as peacefully as a child. Even the noise of my entrance had not disturbed him.

His gorgeous uniform looked out of place in the obscurity of the cell. I crossed to him and put my hand on his arm.

'Wake up!'

He sat up with a sudden start. 'What is it? Is it time?' he said. Then his glance fell on me. 'Ah, father! you have come at last.'

'Yes, I have come.'

A look of doubt swept over his face at the sound of my voice.

'Surely it is not Father Wiemann?' he said, peering at me doubtfully.

'No.' I unwound the scarf from my neck and took off my hat. 'You know me now?'

He looked, and then burst into an uproarious laugh. 'The young Englishman.'

'Hush, hush!' I looked round anxiously. What would the sentry think if they heard sounds of merriment proceeding from the cell where a priest was supposed to be administering the last sacred rites?

'What is the idea?' asked Ulric.

'You and I will change clothes, and you will leave here in my place. Father Wiemann is to have a horse awaiting you at the bridge on the Lapsburg road.'

'And yourself?'

'Oh, I'm all right,' I responded lightly. 'You may be sure I will declare my identity in good time.'

'Yes, but'—

'Don't forget I am the English ambassador's nephew. They can do nothing but escort me to the frontier.'

He looked at me thoughtfully. 'Yes,' he said; 'I suppose you are safe enough.' Then he reached out his hand and took mine. 'It is a plucky thing to do—what one might expect from an Englishman. And I—thank you.'

'I promised Kata,' I murmured.

'Poor Kata!'

'We mustn't waste time,' I said. 'We are far from being out of the wood.'

'We've got to change clothes, haven't we?'

I nodded. He began to strip off his gay uniform. As he took off one of his heavy boots, he let it fall on the ground with a terrible clatter. I threw up my arms appealingly. 'For heaven's sake be careful!'

'I am very sorry.'

In a few minutes I had struggled into his clothes, and he into mine. I wound the scarf round his neck.

'You are a little taller than I,' I remarked. 'You had better stoop a little.'

'Will this do?' He bent himself nearly double.

'I'm not more than half an inch shorter,' I rejoined vexedly. 'And I think you had better be overcome by the sad scene you have left. Cover your face with your handkerchief.'

He went to the door of the cell, and then came back.

'We will meet again, and I will thank you then.'

'You have nothing to thank me for,' I replied hastily, 'except for getting you into this mess.'

'No, no,' he rejoined. 'At the most, you only precipitated matters. The end must have come sooner or later. I have been thinking, and I see I have acted shabbily. I have allowed myself to be a mere tool in the hands of others. Worse than that, I have acted dishonourably in letting Elma believe I loved her when I knew my heart was another's.'

He spoke with a solemnity that I had never before witnessed in him.

'But the crown is rightly mine,' he went on almost defiantly. 'I deny that I have done wrong in striving to gain it. I may have made mistakes, but'—

I was anxious to get him away. Every moment seemed a waste of precious time.

'I hope you will retrieve your mistakes in the future,' I said sententiously. 'But you will have a difficulty in doing so if you are shot at sunrise. Come, hasten. This is no time to moralise.'

'I am going,' he rejoined submissively. He strode to the door.

'Open!' he shouted.

'Be quiet!' I exclaimed angrily. 'They will recognise your voice if you speak. Now, do try and think what you are doing. Remember this is a serious matter for you.'

The door opened; he smiled over his shoulder at me, and then concealed his face in a handkerchief. I flung myself down on my knees in the darkest corner of the cell, my face bowed in my hands. As Ulric went out the janitor entered and moved about the cell.

'It will be daybreak in an hour,' he observed cheerily.

He soon left me, and I heard the door close after him. I sprang up and arranged the lamp so that the mattress was in shadow. Then I flung myself down on it and tried to sleep; but it was impossible. The thoughts went buzzing through my brain like a flock of angry bees. Had Ulric escaped? Had the priest managed to procure a horse? Supposing the guard refused to accept my explanation that I was not their prisoner? It was useless to strive to sleep. I sat up, and, leaning against the wall with my arms folded, resolved to wait till the allotted time should dispose of my questionings.

I had not sat long when I heard the key turn in the lock. Had the time arrived so soon? I felt my heart beating. Or was it the return of Ulric?

I flung myself down on the mattress, with my face to the wall. I heard the door open and footsteps approach my side. I lay still, wondering who the intruder was, and then I felt a light touch on my shoulder.

'Ulric,' said a woman's voice. I did not move, but my heart almost ceased to beat from astonishment. It was the voice of the Queen!

I felt the fingers wander to my cheek, and I turned towards her, praying that the shadow was deep enough to disguise my features.

'Elma!' I ejaculated sleepily, my knuckles in my eyes.

'Yes, it is I.'

'Why have you come?' I murmured.

'I wanted to speak to you.'

'I would rather be—alone.'

She flung up her arms with a wild gesture.

'You hate me?'

I was silent. She commenced to pace the narrow cell restlessly.

'Ulric, Ulric!' she went on excitedly; 'do you remember the days when we were children together? I loved you then. I tried to help you, to protect you, to keep you from sin and sorrow.' A wild sob rose to her lips. 'And now, look at us. You are lying there, and I stand here a miserable woman. This is the end of it all. May God help us both!' She burst into tearless sobs.

I lay still, for if I came within the circle of the lamp's light or spoke much discovery was certain. Suddenly I felt her breath on my cheek and her arms round my neck.

'Ulric,' she whispered. 'Ulric, I love you. I cannot let you die. I was mad last night—mad with rage and jealousy; but now I am calm.' Her arms tightened their clasp. 'I thank God, He has awakened me before it is too late. When the day dawns you will be free to leave Lapsburg and its wretched Queen and all the sorrow and pain of these last days. You will be free to go away into the wide world, where you will never see Elma, whom you hate, and where Kata will always be by your side.'

The pathos in her voice brought the tears to my eyes. Suddenly she broke into wild, hysterical weeping.

'Why could you not have loved me?' she moaned. 'Why did you lie to me? Oh, how cruel you have been!'

I remained uncomfortably silent. What could I do? Suddenly she bent over me, and I felt her passionate kisses on my face. I struggled to free myself. It seemed that I was fated to be put into false positions. I had not betrayed my identity because I feared that Ulric had not had time to make good his escape. But how far was I justified in listening to wild outpourings which were obviously not intended for me? How far was I entitled to receive her kisses?

I sat up. 'Don't,' I cried, full of shame and bewilderment. 'For heaven's sake, stop!'

She was on her knees by my side. I sat up and looked at her. The day had broken, and from the barred window in the wall a faint gray light was feebly making its way. Over the Queen's face I could see bewilderment gathering. She sprang to her feet and turned the lamp, so that its rays fell full on my face.

For some moments she stood silent.

'You are not Ulric?' she said at last, with obvious effort.

'No,' I replied, hopelessly, helplessly. 'I am not Ulric.'

She pushed up the lamp and held it close.

'Who are you? I know your face.'

'I am Lord Carton's nephew.'

'Ah! How came you here?'

I began to tell her, when the blood suddenly rushed to her face.

'How dared you?'—she began. I knew she was thinking of those burning kisses she had pressed upon my lips. She clenched her hands, and for a moment I thought she was going to strike me.

'I am sorry; but I could not help it.'

'Oh!' She ground her teeth.

'I can only express my regret at your unfortunate mistake,' I went on humbly. For a time she was silent, and then, though I may be mistaken, I thought I saw the flicker of a smile pass over her face.

'Where is the Count?' she said, and undoubtedly her voice was softer. She looked round the cell, as if to find him. Then her eyes fell on the clothes I was wearing.

'These are his!' she exclaimed.

I nodded. 'If you will but listen'—

'Go on.'

I told her the whole story in as few words as possible. She listened quietly. When I had finished she held out her hand.

'It was brave of you, and I am glad—yes, I am glad you did it. It will save trouble and possible complication.' She stood thoughtfully silent for a few seconds. 'But when you see Ulric again—if you ever see him—tell him that I had decided not to let him die. Tell him this, for my sake. I cannot bear that he should think I was without mercy.'

I took her hand and raised it to my lips.

'I might have guessed,' I said softly, 'that your heart would relent.'

She looked at me with some favour.

'Perhaps you were wiser not to have trusted to the chance. A woman who has been insulted'—

'Ulric's last words to me,' I interposed hastily, 'were of keen regret that he should have caused you pain.'

She moved a little impatiently. 'Come,' she said, 'there is no longer reason why you should be confined here.'

She pushed open the cell-door and walked out. I followed her. We met the janitor in the passage. When his glance fell on my face he could not restrain a cry of astonishment. The Queen turned at the sound.

'A pretty jailer you have proved yourself,' she said contemptuously. The look of bewilderment on the man's face seemed to strike her as ridiculous, for she gave a short laugh. 'Be more careful another time,' she said, and led the way down the corridor.

At the entrance to the building we encountered the guard. I shall never forget their looks of astonishment. The Queen beckoned the sergeant.

'So you have let the Count Ulric escape?' she said sternly.

'Escape!' ejaculated the sergeant. 'It is impossible.'

'The priest!' exclaimed one of the men.

The Queen turned on him sharply.

'You are clever!' she exclaimed; 'but it is after the event.'

Outside, a closed carriage had been drawn up. The day had not fully dawned, and the boulevards stretched gray and dim in front of us.

I opened the carriage door for her. She made as if to enter, and then stopped.

'Our ways part here,' she said. 'It is probable we shall not meet again.'

'I hope we shall meet again,' I murmured. Her lips parted as if to smile, but she restrained herself.

'You will no doubt leave Lapsburg to-day?' There was a note of command in her voice.

I bowed. 'It will perhaps be best.'

'Much the best.' She again moved as if to enter the carriage, and again turned. She held out her hand.

'Good-bye.'

I took her hand, and raising it to my lips, kissed it several times, with unnecessary fervour. Why I did this I can hardly say. She was handsome, and I am too susceptible. Perhaps

her kisses were still warm on my face. At any rate, I kissed her hand with a passion which was inexcusable.

She drew her hand away, and her face reddened.

'Yes,' she said, with no great indignation in her voice; 'you must leave Lapsburg to-day.'

She entered the carriage, and I closed the door. As the carriage drove off she leant forward.

'Good - bye,' she said again with wonderful softness in her voice, and smiled.

And so, rather urged on by my good uncle, the noon of that eventful morning saw me beyond the frontier of Herzoglia. Now I am back again at Oxford, pursuing the routine of an undergraduate's life. I should be half-inclined to consider the whole matter as a dream if it were not that I received only the other day, through my uncle, a letter from Count Ulric, thanking me for what he called the services I had rendered him. The letter was from Vienna, where he urged me cordially to visit him.

I wonder sometimes whether, in the days to come, Elma, Ulric, and myself will meet again.

FRUIT: ITS CULTIVATION AND SUPPLY.

By Dr A. J. H. CRESPI, Wimborne.



COMPLAINT almost certain to be heard every autumn in the fruit-growing districts is that the abundance of plums is such that it does not pay to gather and send them to market. It is quite possible that in those districts where plums grow and bear luxuriantly there may have been a superabundance, and prices may have been unremunerative. Unfortunately, in most country towns fruit is never plentiful, seldom of good quality, and rarely cheap. Our fruit orchards are confined to certain limited regions—for example, the neighbourhood of Stratford-on-Avon and of Sittingbourne. The country at large knows them not, and it comes about that, while in some of our great towns good plums may sell at two pounds for three-halfpence, or even for a halfpenny a pound retail—they do in Birmingham in plentiful years, and pears have before now been almost unsaleable in some places—in other places, not so very far off, very inferior fruit may be fetching fourpence a pound. It may be perfectly true, moreover, that in the plum and pear districts the prices are too low; but would not the best remedy for this state of things be the combination of fruit-preserving factories with fruit-growing?—while far too little has yet been attempted in tinning vegetables. Last winter strawberry jam sold, in a small country town, at sevenpence-half-

penny, black-currant jam at sixpence, and plum jam, weighed out and sold over the counter, at threepence-halfpenny the pound. It must be perfectly obvious that in abundant years fruit-growers would do far better to preserve a large part of their excess, and not, for a few days or weeks, flood the market with one of the most perishable of all vegetable products. Fruit-preserving factories do not require a very elaborate or costly plant, and can be easily conducted. In some towns they have been tried and have answered.

I quote from a recent issue of the *Journal* of the Board of Agriculture a most suggestive passage: 'Practical men not only hold that the fruit-acreage of this country is not excessive, but that it may be extended, and that fruit-trees and fruit-bushes may, with due regard to the dominating conditions of soil, climate, and situation, and in reasonable propinquity to populous places, still be planted with good prospects of profit. It is essential, however that more care than is often forthcoming should be taken as to details of cultivation, picking, packing, and sale. It should be remembered when planting that it is very desirable to ensure a regular succession of fruit. When fruit plantations are made there should be a due proportion of each kind of fruit tree, plant, and bush suitable to the locality, in order that all the eggs may not be in one basket.'

Fruit-farmers, as a rule, consign the whole of their fruit to the nearest fruit-market without any regard to the state of supply and demand. To some extent, it may be said, this is unavoidable in the case of soft fruit, which *must be sold* as it ripens. And as by far the largest part of the fruit grown in this country is produced in counties near London, the three fruit-markets of the metropolis—the Borough, Covent Garden, and Spitalfields—are frequently glutted in seasons like the last, and fruit is occasionally unsaleable, or sold at absurdly low and unremunerative rates, because the supply exceeds the demand limited by the capabilities of the distributing machinery of these three centres. At the same time, in some of the suburbs of London, in many of the large provincial towns, and even in many country towns and villages fruit is either not obtainable or only at prices which make it a luxury.'

Fruit does not require a large outlay nor an extensive plot of land. A most interesting little book by the late Archdeacon William Lea, M.A., entitled *Small Farms: How they can be made to answer by Means of Fruit-Growing*, contains a passage deserving close attention:

'In 1864 I bought three acres; and having long had a hobby in favour of small farms, I commenced to ride it at once, with a view of seeing how far such farms might be made to pay if planted with fruit. One portion I devoted to specimen-trees of various kinds—apples, pears, plums, gooseberries—with a view of ascertaining the sorts which would make the best return if planted in quantities. On another portion I experimented with vegetables, and on a third I made a plantation of gooseberries, black-currants, and plums, and sold the produce. It is of this third portion, as nearly as possible one acre in extent, that I purpose to give an account. I first cleaned and double-dug the land, made a broad walk up the middle, and then planted it with bushes six feet apart, in rows six feet from one another. Among these I planted plums—some twenty-four, others only twelve feet apart. My stock consisted of 800 gooseberries, 320 black-currants, and 110 plums—1230 in all; the exact number to an acre, planting six feet apart, is 1255. For the first three years I had room for three lines of potatoes or other vegetables between the rows; then, as the bushes increased in size, for two; and in the last and seventh year for one line only.' That beautiful orchard is now part of the Droitwich public park.

Fruit-trees, when in full bearing, require comparatively little attention, though they are all the better for some care, and for many years they usually continue bearing more and more abundantly. Four hundred bushels of apples per acre have been gathered, and a single Blenheim pippin has been known to yield from twenty to thirty bushels of excellent fruit; while the number of plums, pears, and cherries to the acre sometimes

picked is enormous, and even at low wholesale prices represents many pounds sterling per acre and leaves a handsome balance to the grower. The real difficulty, however, is that nearly all the available fruit is poured into a very few great towns, where the heavy rent and rates leave the fruit-farmer the barest possible margin. This winter much more fresh tinned fruit has come into the market, and here lies the true outlet in seasons of over-abundant fruit crops.

What we urgently need is more orchards in those vast districts where fruit is so scarce as to be seldom seen, and where it does not form any appreciable part of the ordinary food of the population. Much remains to be done before this desirable state of things is brought about. On the whole the area given to fruit is considerable, and is growing, but it is mainly confined to a few counties, or, still worse, to parts of counties.

In 1890, according to the agricultural returns, the area devoted to small fruit-trees was 4300 acres more than in the previous year, while in 1873 there were not 150,000 acres of orchards in Great Britain. Twenty years later the area had reached 203,000 acres. Moreover, in the former year the whole area given to fruit, nursery, and market gardening was little more than 200,000 acres. We are undoubtedly moving, but not nearly fast enough.

The chief stumbling-block to a better fruit-supply in country towns is the difficulty of knowing how to sell the fruit—that is, of reaching or getting at the consumer. This applies, too, to all sorts of agricultural produce, which often costs the small householder, when he is fortunate enough to get any, enormously more than the highest prices he sees quoted in the papers as ruling in the great towns.

One of the easiest ways out of the difficulty would seem to be building, where market-houses do not exist, covered rooms large enough for a dozen or even a score of country-women to stand in and sell their produce. A small charge—a shilling a day—could be made, and in this way, were the place open two days a week, the convenience to residents would be enormous, while sellers and producers would find a ready and remunerative market. Fruit, vegetables, poultry, rabbits, eggs, and flowers could be sold promptly and at good prices, and without the costly intervention of railway charges and middlemen. These women would not only sell the produce of their own gardens and allotments, but in many cases they would also sell that of their neighbours on commission. A great impetus would thereby be given to raising fruit and garden vegetables—a boon to growers not less than to purchasers.

Such market-houses need not be dear. £1000 would build a large one, whilst half that sum would, generally speaking, be sufficient, and would provide ample accommodation for a dozen, or even twenty, women; and at the charge suggested—one

shilling per day—a gross return of from £50 to £100 a year could be counted upon.

Some such plan is urgently needed, because in many small country towns orchard and garden produce can hardly be got at all; or when it is to be bought, it is at prohibitive prices. Most country greengrocers have their own gardens, and will only sell their own produce, for which they charge long prices; while the country folks, even when they have a large surplus to sell, can only do so by walking wearily from house to house on the chance of securing purchasers. Sometimes a dozen higglers will call in a day; at other times not one will be seen for weeks at a time. In short, small country towns have few of the conveniences, and none of the abundance, of great towns.

An abundant and cheap supply of fruit in our small towns would give a much-needed stimulus to

fruit and market gardening, and would also lead to much extra labour being utilised. At present the dweller in country towns may hear much of the superabundance of fruit; all he actually sees of it is when he chances to pay a visit to a large town, where he observes every imaginable variety and quality for sale at prices which positively stagger him. A year or two ago in certain country towns in the south of England pears were offered at half-a-crown per dozen, and half-ripe bitter plums at tenpence a pound, though in certain great towns the former were sixpence a dozen, and the latter a penny a pound. Vegetables, too, were as dear; and old tough peas were being sold at one-and-eightpence the peck in a certain important Dorset town, with 120 trains a day, on a particular day when from fivepence to sevenpence was being asked in Birmingham for peas of far better quality.

A PERSONAL EXPERIENCE.

By T. W. WILKINSON.



MARK EDMONDSON did not wear his heart on his sleeve, but he started as his eye caught a bill on the notice-board outside Bow Street Police Station. It was headed, in black, aggressive capitals, 'Murder,' and it contained the usual vile reproduction of a photograph—a photograph for which he would, in the days when he cultivated a moustache and small 'side-blinds,' have passed as the original. The portrait was astonishingly like the Mark Edmondson of three years ago.

His companion noticed his momentary surprise, and, following his glance, thought that the cause was the announcement as a whole. 'You're not George Dixon, wanted for the Plymouth murder, are you?' he asked jocularly. 'If you are, I'd better arrest you at once.'

'No; I've done nothing yet to make the police or the public interested in my features,' said Edmondson carelessly. 'The fact is, Mr Dobson'—he paused for a moment, and then continued, obviously as the result of second thoughts—'I once knew a face remarkably like that villainous visage.'

Looking again at the bill, he followed Inspector Dobson into the police-station. After jotting down in his note-book a few details of an arrest, he hurried down to the *Comet* Office in Fleet Street, and was soon closeted with his editor.

'I've just hit on a scheme for proving how grossly incompetent our detectives are,' he began.

'Yes?' observed the chief calmly. He was not prone to fall into raptures over his young men's feats in eccentric journalism. Although he was then publishing a series of scathing articles on the

administration of Scotland Yard—sensational 'copy' was uncommonly scarce—he listened with much the same air that he would have assumed if the reporter had asked for an increase of salary.

Edmondson then related how surprised he had been on seeing the Plymouth murderer's portrait. 'Now,' he proceeded, 'what I propose is this: Suppose I go to Clarkson's, get made up as Dixon—that won't be a very difficult matter—and ramble about for a few hours, shoving myself right under the very nose of the police. The chances are that nobody will identify me as the wanted man. If I am not pulled up—well, that will be another proof of the incapacity of the detective force. If, on the other hand, I should be arrested, I can easily regain my liberty by throwing off all disguise and explaining that I wanted "copy." In any case, I can do a personal-experience article.'

'All right,' said the editor, turning to his desk. 'Take the thing in hand at once.'

The reporter left the office in a complacent mood. He thought he saw his way to creating a sensation. Returning to Bow Street, he carefully perused the description of the murderer, and then walked over to Wellington Street and plunged straightway into Clarkson's. When he came out again he was a fac-simile of Dixon, as well as of his former self.

As he walked along the Strand he surveyed the reflection of his figure in shop windows with increasing delight; but when he reached Charing Cross he tried to place himself in the position of the hunted man. First he circled Trafalgar Square, thence making his way leisurely to Hyde Park Corner. Then he perambulated Regent Street for half-an-hour. All the while he looked every constable he met straight in the face and favoured those whom he imagined to be 'Yard men' with

a prolonged stare. But, much to his disgust, they took no more notice of him than of any other unit of London's millions.

'The idiots!' he mentally exclaimed as he skirted Leicester Square. 'A murderer might walk about in broad daylight for a whole week without being arrested.'

When he again arrived at Charing Cross he hardly knew what to do. So far his ramble had been productive of hardly any incident. There had not, indeed, been a single event worth a couple of lines of 'copy.' And yet he was tired of masquerading as a murderer. Should he return to the office, or was it worth while to prowling about for another hour? As he stood on the kerb disappointed and irresolute a hand was laid gently on his shoulder, and simultaneously a voice whispered in his ear, 'Mr Dixon.'

Edmondson's heart throbbed violently as he wheeled round. 'At last!' he exclaimed. 'So you have found me, then?'

The owner of the hand was a shabbily-dressed man, whom the reporter had not, to his knowledge, ever seen before. His whole air was mysterious, and he glanced furtively from right to left, as if desirous that the attention of passers-by should not be attracted. 'Not a word,' he said, warningly raising a very dirty forefinger.

'Oh, I know all about that,' returned Edmondson airily. '"Your wushup, I cautioned the prisoner," &c.'

'Recognised you in a moment, but I've only just seen you,' went on the stranger hurriedly; and, thrusting something into Edmondson's breast-pocket, he instantly darted away, and was quickly swallowed up in the flowing tide of humanity.

The reporter was for some moments too much astonished to move or speak; he could only gaze after the man open-mouthed. What did it mean? Here he had been practically caught only to be let go again! Ah! what was in his pocket? It was an envelope, sealed but unaddressed. Hastily tearing it open, he found inside a short note:

'Tuesday.

'Shall have the money for you on Thursday night. Will be at St Pancras in time for you to catch the midnight train to L'pool.'

Instantly a flood of light dawned on him. He had been mistaken for the murderer, not by a detective, but by an emissary of the man's friends, who were assisting him to fly from England! Doubtless the fugitive was then in town, and should have been at Charing Cross at about the time he (Edmondson) was there.

'Was there ever such a coincidence—or such luck?' thought the reporter. 'Anything more extraordinary I never heard of. Why, this little adventure will be worth no end of "copy." I must find Dobson.'

Hailing a cab, he drove to Scotland Yard, and, giving a constable one of his own cards, asked to see

Inspector Dobson. He was shown into a small room, and presently that gentleman entered. When he caught sight of his visitor he seemed not a little perplexed, glancing two or three times with knitted brows from Edmondson's face to the bit of pasteboard.

The reporter burst into deep-chested laughter. 'It's all right,' he said. Then he told the detective of his quest for 'copy' and its wholly unexpected result. 'Here is the letter,' he concluded, pulling from his pocket the note given to him at Charing Cross, 'and, unless I am greatly mistaken, it will lead to the arrest of the Plymouth murderer.'

Inspector Dobson read and re-read the message, smiling massively the while. 'Capital!' he exclaimed.

'Isn't it?' asked the reporter gleefully. 'It gives the whole thing away.'

'Just so,' said the Inspector. 'And you've put us in for a smart capture by a plan to show us up! By the way, what are you going to do about your article now?'

'That depends upon circumstances,' responded Edmondson cautiously.

The detective looked at the note. '"Tuesday." It is now Thursday; so he's going to cut down to Liverpool to-night.'

'To think of his taking the high-road to America!' said Edmondson, with scorn. 'He couldn't have a dog's chance of getting through in any circumstances. What an ass he must be!'

'Criminals of his class generally are,' said the detective sententiously. 'What about to-night?' he queried abruptly. 'You'll turn up at St Pancras?'

'Certainly.'

'Do so, by all means,' said the Inspector. 'You'll have a big sensation to-morrow. I'll meet you outside the station, opposite the clock-tower, at half-past eleven—no, say a quarter-past.'

Shortly after eleven o'clock the reporter was at the appointed place of meeting. Inspector Dobson was not there, nor did he put in an appearance at the quarter-hour. Edmondson paced to and fro, fuming with impatience and frequently glancing at the clock, till the hands indicated that in ten minutes the express to the north would start on its long journey. Still there was no sign of the detective. The reporter, his mind teeming with a thousand forebodings, then strolled up to the departure platform. Beginning at the guard's van, he walked from end to end of the midnight train, looking in every compartment; but, to his bitter chagrin, he could not see anybody in the least like his mental portrait of the Plymouth murderer. Scarcely had he reached the engine than there was a banging of carriage-doors, a waving of lamps, a mellow whistle, and then the train moved out of the station.

'Confound it!' muttered Edmondson, as he watched the red light on the rear van grow fainter and fainter. 'Neither Dobson nor the murderer here. What's happened now?'

This question remained unanswered till the following morning, when the pressman found on his desk a letter from Inspector Dobson:

'Our detectives,' wrote that gentleman, 'may be "asleep" (*Comet*, August 14), but they are sufficiently wide awake to hoax some enterprising but credulous journalists. By accident I saw you

go into a certain establishment this morning, and I also saw you—though not by accident—come out again. Putting two and two together, I had you watched, soon guessed your game, and proved that I was right by means of the letter you received. I hope you were not seriously inconvenienced by your journey to St Pancras last night.'

THE MONTH: SCIENCE AND ARTS.



MUCH interest has been aroused by Professor Ramsay's discovery of certain new constituents of the atmosphere, due to a method of research rendered possible by the fractional distillation of air in its liquid form.

In the first place, 750 cubic centimetres of the liquid were reduced to 10 centimetres, the gas from which, after being deprived of its oxygen and nitrogen, left a residual vapour, which gave, besides the spectrum of argon, an additional spectrum before unknown. This new gaseous element has been named Krypton ('concealed'). By the same method of research it has since been discovered that argon has intimately associated with it two gaseous substances which there is every reason to believe are also elementary in their nature. The lighter of these two constituents of argon has been named 'Neon,' and the heavier one 'Metargon.' These bodies have hitherto escaped detection by the most careful observers, and would have yet remained undiscovered had it not been for the new power which liquid air gives to the physicist.

OUR MUSEUMS.

A select committee of the House of Commons is inquiring into a very important subject—that of the administration of the museums of the Science and Art Department, and they are examining as witnesses those who are best able to give information as to the educational value of these establishments. One of the witnesses very opportunely called attention to the late Professor Huxley's opinion that this nation would have to face an industrial war, the result of which would be far more serious than a mere national war. It would not be a question of battleships and cruisers, but a question of schools. So far as the British fleet was concerned, it was supposed to be twice as strong as the fleets of any two Powers. That might be so, but educationally we were scarcely on a level with Switzerland. We could not hope to fight this struggle for existence unless we had battleships—by which he meant thoroughly developed scholastic institutions.

ANIMAL ODOURS.

A curious fatality lately occurred in the streets of London owing to a horse being frightened by

the smell of a performing bear, the vehicle to which the horse was attached being brought into collision with a wagon, and one of its occupants killed. In commenting upon this lamentable accident, the *Lancet* points out that horses are peculiarly sensible to and terrified by the odour of a bear or of a camel, and suggests that fear of the bear may be a reminiscence of that far-away time when the primeval horse became a prey to the cave bear. But no such explanation can be given for the horse's dislike to the proximity of a camel, whose smell, although disagreeable, is not much more offensive than, and very similar to, that of a goat, to which animal the horse shows no aversion. There certainly can be no hereditary fear of the camel, as there may be of the bear, and it is difficult to account for the horse's antipathy to the first-named animal. The subject of animal odours is a very interesting one, and it does not seem to have received the attention which it deserves. It may be that some of the dumb animals have a far more acute sense of smell than we give them credit for, just as we know that some of them have more sensitive hearing apparatus than is possessed by the human family.

THE RABBIT PEST.

Australia and New Zealand are now trying another plan to cope with the rabbit pest. Instead of being poisoned, the rabbits are now trapped, frozen in their skins, packed in crates, and exported to London as an article of food. It is hoped that this new departure will lead to a rapid diminution of the prolific rodents. Some, indeed, prophesy that the animals will be brought to the point of extermination in a few years. The success of the experiment depends upon whether the frozen rabbits will present a palatable and wholesome food. If this proves to be the case they will be welcomed as a boon. But it must be remembered that for many years rabbits have been imported to this country in tins in that overcooked condition common to this type of food, and that they have not been looked upon as delicacies. Let us hope that the frozen food will meet with better appreciation.

HOW TO VANQUISH THE MOSQUITO.

According to an American paper, *The Public Health Journal*, the dreaded mosquito, which is

such an intolerable nuisance in the summer months, more particularly along river-banks and on the seacoast, can be easily abated by the use of a very simple remedy. It is stated that but two and a half hours are required for the development of the full-grown mosquito from a mere speck, its first stage. It can be instantly killed either in its infancy or at maturity by contact with minute quantities of permanganate of potash, the cheap purple salt which is used so much for disinfecting purposes. It is said that a solution of the salt containing only one part in fifteen thousand of water, distributed in the marshes where the mosquito breeds, will render the development of their larvæ impossible. To quote the *Journal* itself: 'A handful of permanganate will oxidise a ten-acre swamp, kill its embryo insects, and keep it free from organic matter for thirty days at a cost of twenty-five cents. With care, a whole state may be kept free of insect pests at a small cost. An efficacious method is to scatter a few crystals widely apart. A single pinch of permanganate has killed all the germs in a thousand-gallon tank.'

AN ACQUIRED HABIT.

It is a matter of general knowledge that the mountain parrot of New Zealand, the kea, has acquired the very destructive habit of piercing the backs of sheep with its sharp beak in order to feed on the kidney fat of the unfortunate animals attacked. It was at one time believed that the birds had learned this habit from procuring fatty particles from the skins of sheep which had been slaughtered; but now a more likely solution of the problem has been suggested by a correspondent of the *Zoologist*. This gentleman, who writes from Melbourne, tells us that in the hilly districts of the middle island of New Zealand there grows in great quantity a white lichen which bears a strong resemblance to sheep's wool. Beneath this lichen are to be found small white fatty substances, which some suppose to be the seeds of the plant, and others describe as maggots which infest it; but whatever they be, they form a favourite food of the kea. It is suggested that the bird, misled by the resemblance of the sheep's wool, digs down into the flesh in the hope of finding this white substance of which it is so fond, and that in this way the new habit has been originated. In the first place, probably the birds were misled by mistaking dead sheep for masses of the lichen under which they had been accustomed to find their favourite food.

X-RAY PHENOMENA.

The discovery of the mysterious X-rays by Professor Röntgen of Würzburg was considered of so much importance in our own country that a Röntgen Society was soon suggested and established. This society busies itself in every matter having relation to the X-rays; and its secretary, Mr E. Payne of Hatchlands, Cuckfield, Sussex,

is always ready to afford inquirers information as to its aims and doings. The committee are now anxious to accumulate facts relative to the alleged injuries which result from continued application of the rays—burning of the skin, shedding of the nails, &c.—and they are appealing to medical men who work with the X-rays for information on the subject. With this view they have prepared a series of questions, so that the information may be collected in convenient form. Copies of these will be gladly sent to any medical man or other worker with the X-ray apparatus who may be acquainted with a case of injury of which he is willing to give particulars.

DEEP-SEA FISHING.

Prince Albert of Monaco has for the past fifteen years made oceanography his hobby, and the paper which he read the other day before the Royal Geographical Society describing his experiences was full of interest. Commencing with a little sailing-schooner of 200 tons, he replaced it in 1890 by a stronger vessel of 560 tons; and now a far larger one is being built for him by Messrs Laird of Liverpool, in which he hopes to continue his researches. Much of his work has consisted in collecting specimens of marine creatures from depths sometimes as great as 1600 fathoms. He used the trawl, and also huge traps made of wood and netting, big enough to hold four or five people. These he would bait with such delicacies as salt-fish, sheep's offal, the heads and claws of fowls, &c.; and, strange to say, these baits are more attractive to certain marine creatures if soaked in a sauce made of asafoetida. One difficulty he met with in the fact that the larger prisoners devoured the smaller ones, and he obviated this by making refuge-traps of small size within the big trap. But occasionally the bigger prisoners found their match in the small crustacea, on one occasion a large dogfish being reduced to a mere bag of skin, its soft parts, muscles and tendons, weighing at least nine pounds, being completely devoured during the twenty hours which the trap remained sunk at the bottom of the water. These traps were sunk like lobster-pots, with a buoy attached so that they could easily be recovered. Many interesting creatures were brought up by this means which would otherwise have remained undiscovered. Bright objects, such as fragments of looking-glass, were hung to the trap, and seemed to attract the marine creatures; and on more than one occasion a good haul resulted from the employment at night of the electric light.

A NEW FUEL.

A new fuel has been introduced in the form of petroleum briquettes, made by a process known as Kuhlows. Petroleum refuse is mixed with ten per cent. soda lye and a like quantity of tallow or any fatty matter, the whole being intimately

mixed by constant stirring, and heated by steam to a temperature short of the boiling-point of petroleum. Incipient saponification takes place, and in this state the plastic mass is capable of taking up a quantity of fluid rock oil, after which addition the mass is allowed to cool, and is run into moulds. For certain uses coal-dust, sawdust, or other refuse can with advantage be added to the compound, or the grease can be replaced by resinous substances. The resulting product is described as a cheap and very convenient form of fuel.

AN ICE-BREAKING VESSEL.

There was lately launched from the shipyard of Sir W. G. Armstrong, Whitworth, & Co. a vessel which, although only a couple of hundred feet long, is of more than ordinary interest. It is an ice-breaker, and its particular mission is to keep open the port of Hango for the Russian government at that time of year when it is generally ice-bound. Former ice-breakers have been built with a long, cut-away bow, so that, partly by speed and partly by forcing the weight of the vessel above the ice, the obstruction has given way under repeated attacks. The new boat is designed to work upon a totally different principle. It has two propellers, one in the ordinary position, and the other forward, the object of the latter being to give the water under the ice a high sternward velocity, so that the ice is left without support. Then comes the bow of the vessel with its heavy, crushing action, and breaks through with comparative ease. The vessel is being fitted with two sets of triple expansion engines, which are of special design so as to fit them for the heavy work which they have to accomplish.

AUTOMATIC TELEPHONE EXCHANGE.

A great advance in telephonic communication is indicated in the introduction from America of the automatic exchange, by which device a subscriber can put himself into direct communication with any one else on the system without the help of an intermediary. The automatic instrument at once dispenses with the large staff of skilled assistants which is necessary for the old system of exchange, and a further advantage is that the utmost secrecy is maintained. It would not be possible to describe the clever mechanism by which these results are brought about without the assistance of complicated drawings. It will be sufficient to say that each subscriber has attached to his instrument a disc pivoted at the centre, and bearing the figures 0 to 9. Supposing that he wishes to speak to a neighbour whose number is 624. He will insert his finger in a hole opposite the figure 6, pull round the disc, and do the same in succession with the other two figures 2 and 4. This action connects him with No. 624, and he is at liberty

to talk to the subscriber represented by that number. When the conversation is finished he hangs the receiver on its hook, and the switches which his previous action put in motion return to their normal position. A large number of installations on this principle have been at work for some time in the United States, and are stated to have given great satisfaction to the subscribers. The system is being introduced in this country by the Direct Telephone Exchange Company, who have fitted up a model installation at Winchester House, London, E.C.

TEA-CULTIVATION IN CHINA.

According to the consular report from Foochow, the cultivation of tea in that district has ceased to be remunerative, and the export is now but one-third of what it was twenty years ago. No reason is given for this decline in the industry, and we are left to assume that it is caused partly by the competition of India and Ceylon, and possibly in part by the discovery of certain tricks of trade at which the heathen Chinese is an adept. But whatever the reasons may be, much land formerly devoted to tea is now going out of cultivation, and the curing-houses are being offered for sale to the missionaries. The report in question tells us that the export trade is of great importance to China, for the internal demand for tea is not great. The majority are content with a brew from tea-dust; and when tea is not readily available, other leaves take its place. Here in Britain the consumption of tea is about six pounds per head of the population, but in China it is only half that, even among the small fraction of the people who are tea-drinkers.

A NAILLESS HORSE-SHOE.

One of the most recent novelties, which will, we think, be welcomed as a boon to horse-keepers as well as the animals under their charge, is a shoe patented by Mr R. McDougall of Wellington Street, Glasgow, which can be affixed to the hoof without nails. The new shoe takes the familiar form, but has two projections, one on each side at the back, which engage rings at the ends of a band which passes over the front of the hoof, and is fastened in the middle by a screw attachment to the centre of the shoe. The entire arrangement is simple, and the innovation means that when a horse casts a shoe it will not be necessary any longer to seek the aid of a farrier, for the new shoe can easily be fitted in a few minutes by an inexperienced hand. In a recent trial of the nailless horse-shoes the new invention was put to a severe test—the horse on which the shoes were fitted being attached to a heavy-laden van and worked up and down steep gradients and on granite-paved streets. Notwithstanding this rough work the shoes showed no sign of shifting, and were not removed until worn out. The new shoe obviates all risk of pricking or

laming by nails, and a slight rasping of the hoof is all that is required in attaching it to its bed.

THE TSAR IN PROVERB.

The Tsar (oddly enough spelt by us *Czar*) plays a still more prominent part in Russian proverbs than the king does elsewhere. Some of the following are not peculiar to Russia: 'The crown doesn't save the Tsar from headache;' 'The Tsar may be the cousin of God Almighty, but he isn't just His brother;' 'The voice of the Tsar makes an echo even when there are no mountains near;' 'One tear in the eye of the Tsar costs the country many handkerchiefs;' 'If the Tsar takes to writing poetry, God pity the poets!' 'Time accomplishes what even the Tsar can't do;' 'Even the Tsar's cow can only produce calves;' 'If the Tsar takes smallpox, all the country has the pock-marks;' 'If the Tsar gives you an egg, he expects at least a hen in return for it.'

THE PRESERVATION OF EGGS.

Many are the plans which have from time to time been published for preserving eggs in a fresh state; but, judging from the quality of what are commonly known as 'shop eggs,' it would seem that there is still much to learn in this department of domestic economy. The director of the Agricultural School at Neisse, in Germany, has lately published the results of certain experiments which he has made in this direction; and a record of them will, we feel certain, be useful to many of our readers. Eggs kept in brine for seven months had not turned bad, but were so saturated with salt as to be quite unpalatable. After this first observation we are given a list of some twenty experiments with various agents, with the percentage of eggs spoilt in each during a seven months' probationary period. These are as follows: Kept in solution of salicylic acid and glycerine, 80; rubbed with salt, 70; packed in bran, 70; coated with paraffin wax, 70; immersed in boiling-water for from twelve to fifteen seconds, 50; solution of alum, 50; solution of salicylic acid, 50; coated with soluble glass, 40; collodion, 40; varnish, 40; rubbed with bacon fat, 30; packed in wood ashes, 20; boric acid and soluble glass, 20; potass permanganate, 20; coated with vaseline and kept in lime-water, *all good*; kept in soluble glass, *all very good*. It is curious that the experimenter makes no mention of a plan which is adopted by the French, by which it is said eggs can be kept in good condition for two years. They melt by heat four ounces of beeswax in eight ounces of olive-oil, dip the eggs in the warm liquid, wipe them, and store them in powdered charcoal in a cool situation. Another system, known as the British Egg Storage Patent, has been introduced by Mr. C. A. Christianson, Bernard Street, Leith. He discovered, after a trial of seven years, that eggs must not be enclosed in

any substance, but allowed to be apart in a perpendicular position, the narrow point downwards, so that the air in the warehouse enclosed each individual egg. The position of the eggs was, however, altered every second day. This is accomplished by the simple turning of a lever, which keeps the yolk in its natural position embedded in the albumen. Some eggs have been tested which were under the process for fourteen months, and they were found quite good.

SUMMER'S MELODY.

Oh! picture to yourself a scene like this:

The silent river gliding 'tween its banks,
Each lovely floweret drooping low to kiss

Its cooling surface, in its grateful thanks

For all the strengthening moisture it doth yield;

Whilst, glittering in the sunlight's glorious sheen,

The sweet corn turning to a golden brown;

The verdant meadows covered o'er with green;

The gay lark singing, soaring up and down,

And sailing over coppice, pool, and field;

The mighty forest kings—the elm and oak,

The silvery birch, the stately pine, the beech—

Clothed in the glory of their leafy cloak,

All raise their towering heads as though to preach

Their Heavenly Maker's glory, praise, and care;

Whilst lowing cattle, grazing at their ease,

And feathered songsters singing forth their praise,

The very hearts of men, so hard to please,

Seem glad, as they their thankful voices raise,

And in one song of gladness take their share.

FRANK R. DUTTON.

THE AUGUST PART

OF

CHAMBERS'S JOURNAL

WILL CONTAIN THE OPENING CHAPTERS

OF A STORY ENTITLED

THE SHIP-BREAKERS:

A FENLAND ROMANCE.

By T. ST. E. HAKE.

* * TO CONTRIBUTORS.

1st. All communications should be addressed 'To the Editor, 339 High Street, Edinburgh.'

2d. For its return in case of ineligibility, postage-stamps should accompany every manuscript.

3d. To secure their safe return if ineligible, ALL MANUSCRIPTS, whether accompanied by a letter of advice or otherwise, should have the writer's Name and Address written upon them in FULL.

4th. Poetical contributions should invariably be accompanied by a stamped and directed envelope.

